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MAIL STOP APPEAL BRIEF-PATENT
PATENT
8013-1118

IN THE U.S. PATENT AND TRADEMARK OFFICE BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re application of	Appeal No.
Toshiharu OGURO	Conf. 5144
Application No. 09/659,779	Group 2112
Filed September 11, 2000	Examiner Kim T. Huynh

SYSTEM AND METHOD OF EVALUATING UNIVERSAL SERIAL BUS FUNCTION

APPEAL BRIEF

MAY IT PLEASE YOUR HONORS: June 1, 2004

1. Real Party in Interest

The real party in interest in this appeal is the current assignee, NEC Electronics Corporation of Kawasaki, Japan.

2. Related Appeals and Interferences

None.

3. Status of Claims

Claims 1-8 remain in the application. Claims 1-5 and 8 were rejected and are the subject of the present appeal. Claims 6-7 have been allowed.

4. Status of Amendments

The Official Action of January 13, 2004 was a final Official Action. No response was filed to the final rejection. The appendix includes all claims, including allowed claims 6-7.

5. Summary of Invention

The present invention is a universal serial bus (USB) function evaluator 100 connected between a computer 101 and a USB function 107, such as a printer or scanner (Figure 7). The computer 101 generates tokens in accordance with evaluation test pattern programming software 102 and the tokens are transferred to the USB function evaluator 104. In order to avoid collisions with other data or tokens in the prior art, the timing of sending tokens was estimated or adjusted, which increased the time for the evaluation (page 1, lines 9-25 and page 7, last paragraph bridging to page 8).

By way of background, an IN token indicates that the computer has requested information from the USB function, an OUT token indicates that the computer is about to send information to the USB function, an ACK packet indicates that a USB function is ready to receive data, a NAK packet indicates that a USB function is not ready to receive data, a STALL packet indicates that the USB function is stalled, and a DATA packet includes data (see references generally, including BRIEF et al. at column 2, lines 38-54, and column 4, lines 6-43).

The USB function evaluator of the rejected claims includes a token storage memory 2 (Figure 8) for storing a token transmitted from the computer 101, a packet type judging circuit 10 for judging a type of a return data packet returned from the

USB function (e.g., ACK, NAK, DATA or STALL), and a functional circuit (which may include timing controller 8, IN token holder 16, and oscillator 17) connected to the token storage memory 2 for fetching an IN token from the token storage memory and holding the same. As shown in Figure 8, the functional circuit is also connected to the packet type judging circuit 10 for receiving information about the type of the return data packet, so that if the return data packet is of NAK type, then the functional circuit automatically transmits the IN token held therein to the USB function repeatedly until the return data packet is of either DATA type or STALL type, then the functional circuit cancels the held IN token (see also Figure 9, steps S5-S9 and associated comments at page 22, lines 6 through page 25, line 4).

In other words, the claims define a USB evaluator in which, when a NAK packet is received in response to an IN token, the evaluator holds and repeatedly transmits the IN token automatically until the USB function returns a DATA or STALL packet. As explained at page 25, lines 13-20, this avoids the need to consider the length of time needed for the USB function to return a DATA packet. The USB evaluator holds and retransmits the IN token at prescribed time intervals until the DATA/STALL packet is received.

6. Issues

Whether the subject matter of claims 1-5 and 8 would have been obvious under 35 U.S.C. §103 to one of skill in the art at the time of the present invention over BRIEF et al. 6,205,501 in view of EJIRI 6,434,643.

7. Grouping of Claims

The claims do not stand or fall together. Claims 1-5 and 8 stand or fall together. Claims 6-7 have been allowed and do not stand or fall with claims 1-5 and 8.

8. Argument

The Examiner acknowledges (January 13, 2004 Action, top of page 3) that BRIEF et al. do not disclose or suggest the limitation in which, when the return data packet is a NAK, the functional circuit automatically transmits the IN token held therein until the return data packet is either a DATA or STALL, at which time the circuit cancels the IN token. The Examiner relies on EJIRI for the suggestion to modify the system in BRIEF et al. to include this feature.

EJIRI discloses a method for exchanging data between a computer and a USB peripheral device, such as a printer. The method uses three packets, identified as packets 51, 52, and 53. As explained at column 5, lines 41-46, the first packet 51 includes a packet identifier (PID) 61 and addresses and is an indicator that the computer (the host 12) is ready to receive

data. EJIRI calls packet 51 an IN token, which is sent before the computer receives data. When the IN token is received at the peripheral device, the peripheral device responds with data packet 52, which includes PID 61 and data (column 5, lines 35-46). When the data transfer is complete, a handshake packet 53 is exchanged, which includes a PID 61 and enables the sending of an ACK, NAK or STALL token depending on the status of the data transfer (column 5, lines 47-55). When the computer detects a NAK in handshake packet 53, it resends data packet 52 (column 5, lines 56-58). In other words, the IN token (packet 51) is sent before data transfer and is not resent. If a NAK is received, the data (packet 52) are resent, not the IN token.

Accordingly, EJIRI does not disclose a functional circuit that receives information about the type of return data packet so that if the return data packet is of NAK type, then the functional circuit automatically transmits the IN token held therein to the USB function repeatedly until the return data packet is of either DATA type or STALL type at which point the functional circuit cancels the held IN token.

The Examiner points to EJIRI, column 5, lines 14-60 for the suggestion to modify the system in BRIEF et al. to include this feature. However, as explained above, this section discloses that the IN token (packet 51) is sent before data transfer and is not resent. If a NAK is received, the data (packet 52) are resent, not the IN token.

The Examiner explains (January 12, 2004 Official Action, Response to Arguments on pages 6-7) that EJIRI discloses that when host 12 detects a NAK in handshake packet 53, "it is possible to retry sending these packets with the same data packet 52." The Examiner's reference to "these packets" is not understood, as it is apparent from column 5, lines 56-57 that EJIRI resends the data packet 52. Further, since the data packet 52 is not an IN token (packet 51 is the IN token), there is no suggestion to resend the IN token.

Further, there is no suggestion in the proposed combination to resend an IN token that is held in the hub 13 in EJIRI or hub 110 in BRIEF et al., or to cancel the IN token held therein when the return data packet is a DATA or STALL.

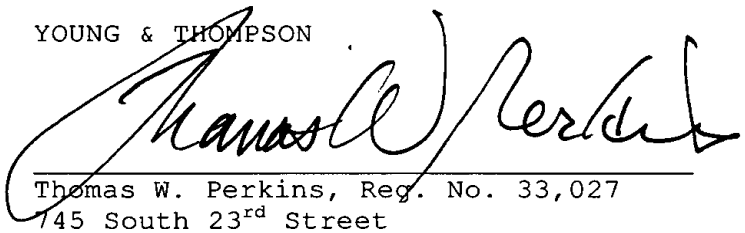
It is also noted that EJIRI uses the NAK after the data transfer has been attempted (in the handshake packet 53 that follows data transer). This is different than used herein, where the NAK is an indication before data transfer that the sender is not ready to receive data. Accordingly, the attempt to shoehorn EJIRI into the parts missing from BRIEF et al. is like forcing a square peg into a round hole: claims 1-5 and 8 avoid the rejection under §103.

Claims 6-7 have been allowed and need not be considered further.

In view of this, it is believed that the rejection of record cannot be sustained and that the same must be reversed, and such is respectfully requested.

Respectfully submitted,

YOUNG & THOMPSON



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9. Appendix

The claims on appeal:

1. A universal serial bus function evaluator connected between a computer and an universal serial bus function, said universal serial bus function evaluator comprising:

a token storage memory for storing a token transmitted from said computer;

a packet type judging circuit for judging a type of a return data packet returned from said universal serial bus function; and

a functional circuit connected to said token storage memory for fetching IN token from said token storage memory and holding the same, and said functional circuit also being connected to said packet type judging circuit for receiving an information about the type of said return data packet from said packet type judging circuit, so that if said return data packet is of NAK type, then said functional circuit automatically transmits the IN token held therein to said universal serial bus function repeatedly until said return data packet is of either DATA type or STALL type, then said functional circuit cancels the held IN token.

2. The universal serial bus function evaluator as claimed in claim 1, wherein said functional circuit comprises:

an oscillator for generating a clock signal;

an IN token holding circuit connected to said oscillator for receiving said clock signal and also connected to said token storage memory for fetching IN token from said token storage memory and holding the same; and

a timing controller connected to said oscillator for receiving said clock signal and also connected to said packet type judging circuit for receiving an information about the type of said return data packet, and said timing controller also connected to said IN token holding circuit for controlling said IN token holding circuit both in a holding timing for holding said IN token and in a transmitting timing for transmitting said IN token to said universal serial bus function.

3. The universal serial bus function evaluator as claimed in claim 2, wherein said functional circuit further comprises:

an EOP detecting circuit connected to said universal serial bus function for receiving said return packet to detect a packet end of said return packet, and said EOP detecting circuit also connected to said timing controller for sending an EOP detecting signal which represents the packet end to said timing controller.

4. The universal serial bus function evaluator as claimed in claim 1, wherein if said return data packet is of DATA type, then said functional circuit not only cancels the held IN token but also transmits ACK token.

5. The universal serial bus function evaluator as claimed in claim 4, wherein said functional circuit comprises:

an oscillator for generating a clock signal;

an IN token holding circuit connected to said oscillator for receiving said clock signal and also connected to said token storage memory for fetching IN token from said token storage memory and holding the same;

an ACK token transmission circuit connected to said oscillator for receiving said clock signal; and

a timing controller connected to said oscillator for receiving said clock signal and also connected to said packet type judging circuit for receiving an information about the type of said return data packet, and said timing controller also connected to said IN token holding circuit for controlling said IN token holding circuit both in a holding timing for holding said IN token and in a transmitting timing for transmitting said IN token to said universal serial bus function,

so that if said return data packet is of DATA type, then said timing controller allows said ACK token transmission circuit to transmit an ACK token to said universal serial bus function.

6. A universal serial bus function evaluator connected between a computer and an universal serial bus function, said universal serial bus function evaluator comprising:

a token storage memory for storing a token transmitted from said computer;

a token transmission circuit connected to said token storage memory for transmitting a token stored in said token storage memory;

an IN token detecting circuit connected to said token transmission circuit;

an oscillator for generating a clock signal;

an IN token holding circuit connected to said oscillator for receiving said clock signal and also connected to said token transmission circuit for receiving an IN token from said token transmission circuit and holding the same;

a receiving shift register being connected to a universal serial bus function for receiving a return packet from said universal serial bus function;

a packet type judging circuit connected to said receiving shift register for receiving said return packet and judging a type of said return packet;

an EOP detecting circuit connected to said universal serial bus function for receiving said return packet to detect a packet end of said return packet;

a timing controller connected to said oscillator for receiving said clock signal and also connected to said EOP detecting circuit for receiving an EOP detecting signal which represents said packet end of said return packet, said timing

controller also connected to said packet type judging circuit for receiving an information about the type of said return packet, and said timing controller also connected to said IN token holding circuit for controlling said IN token holding circuit both in a holding timing for holding said IN token and in a transmitting timing for transmitting said IN token to said universal serial bus function,

so that if said return packet is of NAK type and said timing controller receives both said return packet of NAK type and said EOP detecting signal, then said timing controller allows said IN token holding circuit to transmit the IN token held therein to said universal serial bus function repeatedly until said return data packet is of either DATA type or STALL type, then said timing controller instructs said IN token holding circuit to hold said IN token therein.

7. The universal serial bus function evaluator as claimed in claim 6, further comprising an ACK token transmission circuit connected to said oscillator for receiving said clock signal, and if said return packet is of DATA type, then said timing controller allows said ACK token transmission circuit to transmit an ACK token to said universal serial bus function.

8. A universal serial bus function evaluating system connected between a computer and an universal serial bus function, said universal serial bus function evaluating system comprising:

means for storing a token transmitted from said computer;

means for judging a type of a return data packet returned from said universal serial bus function;

means for fetching IN token from said storing means and holding the same;

means for receiving an information about the type of said return data packet from said packet type judging circuit, so that if said return data packet is of NAK type, then said functional circuit automatically transmits the IN token held therein to said universal serial bus function repeatedly until said return data packet is of either DATA type or STALL type, then said functional circuit cancels the held IN token.